5.0 DISCUSSION AND FINDINGS

Mercury pollution is a significant problem in New Hampshire and throughout the Northeast. Citizens, industry, environmental regulators, environmentalists, and political leaders have expressed much concern about mercury pollution due to its potential human health and environmental consequences. Because mercury is an issue of such great concern, DES has already completed or initiated a number of projects and regulatory actions to address sources and impacts of mercury (see **Appendix 1**). Widespread interest in this problem at both the state and regional levels should spur increased efforts to achieve reductions in mercury contamination. DES believes that the most effective reduction methods are those which encompass both voluntary and mandatory efforts to prevent and control mercury emissions.

Additional controls on air emissions from large combustion sources could be particularly effective in reducing mercury from those sources. Source control strategies are generally straightforward to monitor and enforce, especially if focused on a particular source category. For example, reducing the mercury emission limit to 0.028 mg/dscm for New Hampshire's largest municipal waste combustors would involve only two facilities and provide a 33% reduction in the State's mercury emissions. Existing technology can achieve such reductions, and the testing and enforcement of such limits is considered to be technically and economically feasible. Similarly, additional controls on coal-fired power plants, if technically feasible, could result in a reduction of 246 pounds (16% of total emissions) of mercury per year in New Hampshire. For both coal-fired power plants, and large waste combustion sources there are a number of prevention options which should be evaluated, along with the use of additional controls.

Requiring "end of the pipe" emission limitations for small municipal solid waste incinerators would effectively reduce mercury from these sources, but the economic burden of such mandates may make removal of mercury sources from the solid waste stream a more desirable strategy. Also, Article 28-a of the New Hampshire Constitution prohibits state agencies from imposing unfunded mandates on municipalities, so its provisions must be carefully examined before municipalities are subjected to additional requirements. Article 28-a issues, if any, could be overcome by creating an adequate funding mechanism, such as a surcharge on mercury-containing products, to provide municipalities with funds to meet mercury emission limits on small MSW Combustors or to fund collection and recycling programs for mercury-containing products like fluorescent lamps. This strategy has worked successfully with RSA 149-M:18, Town Reclamation Trust Fund, which allows towns to add a surcharge to motor vehicle registration fees and direct those funds to recycling programs for automotive wastes. The Rural Community Toxic Waste Project has considered recommending an advance disposal fee on products with hazardous components to the New Hampshire Legislature. Such a fee was turned down by the Legislature in 1992 and has not been pursued legislatively since.

New Hampshire has adopted a waste management hierarchy under RSA 149-M which calls for source reduction and reuse (collectively referred to as pollution prevention) as preferred waste management options. These are followed by composting, recycling, incineration and landfilling. Pollution prevention strategies that eliminate the source of the problem (e.g., pursuing the elimination of mercury in consumer products) are much more beneficial than traditional "end of pipe" solutions. While short-term control measures to minimize mercury pollution can be used to achieve more

immediate reductions, particularly from individual sources, implementing source reduction as a long-term solution is the optimum strategy. For example, Toxics in Packaging laws (see sidebar on page 12) have been a resounding success because they target specific hazardous substances in packaging, such as lead, mercury, chromium and cadmium at the source. Unlike such laws, however, outright mercury bans could affect products like fluorescent lamps that have other environmental benefits (e.g., energy efficiency) over their alternatives. Consideration of the balance of such environmental effects is essential when designing effective mercury reduction strategies. A further benefit of pollution prevention is that it often illuminates and reinforces individual environmental responsibility.

Public involvement is an important component for effectively solving the mercury contamination problem. To guide the implementation of this ***New Hampshire Mercury Reduction Strategy*** and further examine options for mercury pollution prevention and reduction, DES will establish a multi-stakeholder task force.

5.0.1 Recommended Action Regarding Mercury Task Force

R-29. By October 31, 1998, establish a multi-stakeholder *New Hampshire Mercury Task Force*. The Task Force should consist of representatives from the New Hampshire Legislature, DES, DHHS, BIA, affected industries and municipalities, the New Hampshire Fish and Game Department (F&G), academia, environmental groups and other interested parties. This Task Force will meet at least annually to review progress on the implementation of the Mercury Reduction Strategy and update it as necessary.

5.1 Public Outreach and Education

Because mercury wastes and emissions are generated by all segments of the population, outreach, education and technical assistance should be an integral part of any mercury source reduction strategy. Specific education initiatives are contained in this strategy, for each source category. In addition, greater efforts should be made to publicize the health hazards of mercury and the existing statewide fish consumption advisory. New Hampshire is committed to conducting a comprehensive public outreach campaign for mercury, and will also actively participate in educational efforts developed by the Regional Mercury Task Force.

5.1.1 Recommended Actions Regarding Public Outreach and Education

R-30. Beginning in January, 1999, conduct outreach and education activities, in conjunction with other interested agencies and organizations, on mercury hazards, alternatives to mercury containing products and methods to reduce the release of mercury to the environment.

R-31. Conduct education and outreach activities, in conjunction with the DPHS and the F&G, to increase public awareness of the statewide freshwater fish consumption advisory. In particular, conduct outreach to those segments of the population that are most sensitive (e.g., pregnant women, young children)

to the health effects of mercury and that consume greater quantities of freshwater fish (e.g. subsistence fishers), by September 30, 1999.

R-32. Conduct outreach, including the distribution of existing facts sheets, to users of mercury (e.g. schools, laboratories, government agencies) on the proper handling and clean-up of mercury spills, beginning in January, 1999.

R-33. Conduct training, through the solid waste operator training program, on the identification and removal of mercury-containing wastes prior to incineration and ensure that those products are safely recycled (ongoing).

R-34. Actively participate in regional public education and outreach efforts on mercury hazards and alternatives to the use of mercury-containing products (ongoing).

5.2 Research and Monitoring

New Hampshire has recently installed a mercury deposition monitor in Laconia as part of a regional monitoring network. Additionally, DHHS in cooperation with DES has been monitoring mercury levels in freshwater fish and has developed an extensive database. This data will be used to evaluate trends in fish mercury levels and update consumption advisories. New Hampshire will continue to work cooperatively with the other New England States and Eastern Canadian Provinces to address additional research and monitoring needs identified by the ongoing NEG/ECP Regional Mercury Task Force. In addition, as a member of this task force, New Hampshire will continue to investigate new and existing sources of mercury (e.g., mobile sources and non-utility boilers) and pursue reductions in emissions from those sources.

5.2.1 Recommended Actions Regarding Research and Monitoring

R-35. Continue support for in-state mercury sampling and monitoring programs in order to evaluate trends in mercury deposition and impacts. This information will be used to update the strategy as necessary (ongoing).

R-36. Actively participate in the NEG/ECP Regional Mercury Task Force efforts to support and expand research and analysis to improve the understanding of mercury sources, impacts and cycling in the environment (ongoing).

5.3 Related Federal Initiatives

5.3.1 Introduction

In addition to the recommended state actions detailed in this strategy, DES should continue to monitor, comment on and encourage federal efforts to manage and eliminate mercury contamination. Examples of some of these efforts include: calling for the appropriate and safe management of the US Department of Defense mercury stockpile; advocating for the

expeditious adoption of the new mercury detection method for wastewater; commenting on EPA rules governing emissions sources; advocating for the collection and analysis of mercury emissions data from coal-fired power plants; monitoring progress on the waste reduction Memorandum of Agreement between EPA and the American Hospital Association; and keeping track of US Coast Guard efforts to monitor the M/V Empire Knight, a sunken ship off the Maine coast containing a considerable amount of mercury; and urging the development of a national mercury reduction strategy and federal legislation to eliminate the non-essential use of mercury in products. The major federal mercury initiatives are described below.

5.3.2 M/V Empire Knight

In February, 1944 the M/V Empire Knight, a 428 foot British freighter ran aground on Boon Island Ledge, Maine and later broke into two sections. The stern section which included the ship's cargo holds sank in approximately 260 feet of water, one and one half miles from Boon Island Ledge. In August, 1990, the Coast Guard became aware of the existence of a "proposed" plan of stowage dating from 1944 which indicated that 221 flasks containing elemental mercury may have been present on the vessel. Later investigation by divers confirmed that all 221 manifested flasks were located in cargo hold 5. All the flasks were recovered but due to their deteriorated condition they were nearly empty. Approximately 1,230 pounds of mercury and nearly 2,200 pounds of mercury-contaminated debris were recovered. An estimated 16,000 pounds of mercury remains unaccounted for and is believed to be spread throughout cargo hold 5. The Coast Guard judged it to be of greater risk to attempt removal since further dispersal of the mercury was very likely. Sampling analysis showed that concentrations of mercury were elevated inside the cargo hold but quickly dropped off to negligible levels in the sediment outside.

The Coast Guard convened a Regional Response Team who unanimously recommended in August, 1995 that the Coast Guard establish an environmental exclusion zone around the wreck. The zone would be 1,000 yards on a side, inside of which no dredging, diving, salvage, anchoring, fishing or other activity that could interfere with the wreck be conducted. The zone would not limit marine navigation as vessels would still be allowed to transit the area. The zone became effective in 1996. The National Oceanic Atmospheric Administration's Hazardous Materials Response and Assessment Division concluded in 1994 that ecological and human health risks from further release of mercury are not of an imminent nature. At present the Regional Response Team is working on the long term monitoring plan for the exclusion zone site.

5.3.3 Department of Defense Mercury Stockpile

The United States Department of Defense (DoD) currently maintains a mercury stockpile of approximately 11 million pounds, which is excess to DoD's needs. In response to concerns from EPA and several members of Congress, the DoD voluntarily suspended mercury sales in June of 1994. Numerous state and regional environmental organizations and agencies, (including DES) have since expressed to DoD their support for the continued suspension of mercury sales from the stockpile. DoD is currently conducting an environmental analysis, which includes the possible environmental consequences of the various options for disposition of the mercury. The Department of Defense is consulting with

EPA on the environmental analysis, which, when completed, will be available for public comment and review.

5.3.4 Federal Regulatory and Policy Initiatives

There are several EPA regulatory and policy initiatives currently underway which bear monitoring by the states. Those initiatives include: the development and adoption of a new mercury detection method for wastewater discharges; the collection of emissions data from coal-fired utilities; and the promulgation of air emissions standards for several source categories. In addition to EPA's efforts, several bills have been introduced at the congressional level which deal with everything from reducing mercury in products to increase regulation of mercury emissions sources.

5.3.5 Recommended Actions Regarding Related Federal Initiatives

R-37. Continue efforts to monitor, comment on and influence federal legislation, regulatory and policy initiatives with respect to mercury research, use, management, treatment and disposal (ongoing).

R-38. Continue active participation in establishing long term monitoring protocols for the M/V Empire Knight exclusion site and to improve understanding of the patterns of contamination around the ship; and, whether or not mercury is becoming more available to the biota (ongoing).

R-39. Encourage the Coast Guard to consider the implications of mass movement of bottom sediments in the region of the M/V Empire Knight exclusion zone possibly induced by microseisims or larger scale seismic events whereby the sediment mass including the mercury could be transported over a considerable distance thereby exacerbating the problem, by December 31, 1998.

R-40. Encourage the Coast Guard to keep the states advised with respect to technical advances which could render recovery of the remaining mercury on the M/V Empire Knight technically and economically feasible, by December 31, 1998.